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ABSTRACTS

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ABSTRACTS

1. Isolation, Identification and Characterization of Heavy Metals Resistant Bacteria from Root of *Eichhornia crassipes*

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ABSTRACT: The pollution of the environment with toxic heavy metals is spreading throughout the world along with industrial progress. Microorganism and microbial products can be highly efficient bio-accumulators of soluble and particulate forms of metals especially dilute external solution. Microbe related technologies mayprovide an alternative or addition to conventional method or metal recovery. The present study deals with isolation, identification and characterization of heavy metals resistant bacteria were isolated from roots *Eichhornia crassipes* in emerging pollutant drainage sites of industries at Unnao, Gajraulla, Hindon River Ghaziabad and Sobhapur village NH-58 Meerut. The eighteen bacterial strains were authentically identified as *Pseudomonas aeruginosa, Pseudomonas fluoresencs, Escherichia coli, Micrococcus luteus, Kleibsella pneumonaie, Staphylococcus aureus,* and *Bacillus subtilis*. The isolates showed optimum growth at alkaline pH 6.5 to 8.5 and optimum temperature for 37.0°C to 4.5°C. The identified isolates are resistant to Arsenic trioxide (As_2O_3), Chromium tri-oxides (Cr_2O_3), Cadmium di oxides (CdO), Lead oxides (PbO), Zinc oxides (ZnO), Nickel oxides (NiO) and Copper Oxide (CuO). The identified heavy metals resistant bacteria could be useful for the bioremediation of heavy metal contaminated industrial effluent and waste water.

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2. Performance of Guava Cultivars with Different *in-situ* Moisture Conservation Techniques under Rainfed condition of Bundelkhand

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ABSTRACT: In Guava orchard of raifed condition of Bundelkhand, artificial irrigation is neither practical nor economical due to non availability of irrigation facility and harvesting of rain water through *in-situ* conservation measures is only viable alternative as adopting vegetative barrier, staggered trench, during July, 2014-February,2015 produced significantly higher fruit yield in respect of quality fruit weight, fruit size, TSS and Vitamin C in winter (Mrig Bahar) with Allahabad Safeda, Shweta and Lalit cultivars. *In-situ* moisture conservation measures could sustain moisture availability for longer duration after monsoon that has been helpful for vegetative growth, flowering and fruiting of guava. Staggered trench and vegetative barrier as a moisture conservation measure gave fruitful results for production as well as quality fruit.

Published in : HortFlora Research Spectrum, 6 (3): 145-152 (September 2017)

3. Fungicidal Management of Apple Scab in West Kameng District of Arunachal Pradesh, India

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ABSTRACT: The present investigation was carried out to evaluate the bio-efficacy of fungicides against scab of apple manifested recently in all apple growing states of India. These diseases are favoured by high rainfall and moderate temperature ranging from 20-22°C during the different fruit development stages of apple. Before, spraying of fungicide on apple scab, the disease intensity ranged from 5.03 to 5.49 % in various treatments and difference was non-significant. Ten day after first spray, among the different fungicidal treatments, Tebuconazole 8% + Captan 32% SC @ 3.0 ml/l recorded minimum (2.92%) disease intensity being at par with Tebuconazole 8% + Captan 32% SC @ 2.5 ml/l (3.18%). However, the highest disease intensity (7.37%) was also recorded in untreated control.
Published in: HortFlora Research Spectrum, 6 (3): 153-158 (September 2017)

4. Standardization of Phenol Free Genomic DNA Extraction of Pomegranate Genotypes for Diversity Analysis

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ABSTRACT: The isolation of intact high-molecular-mass genomic and good quality deoxyribonucleic acid (DNA) is the pre-requisite for many molecular biology applications including long polymerase chain reaction (PCR), endonuclease restriction digestion, southern blot analysis, and genomic library construction. The presence of high concentrations of polysaccharides, polyphenols, proteins, and other secondary metabolites in pomegranate leaves poses problem in getting good quality DNA. The study aimed to determine a reliable and modified protocol based on the cetyltrimethylammonium bromide (CTAB) method for DNA extraction from pomegranate leaves. Easy purification method was added to modify CTAB method using Tris-saturated phenol: chloroform (1:1) and 3M sodium acetate. Polyvinylpyrrolidone (PVP) and β-mercaptoethanol were employed to manage phenolic compounds. Extended chloroform-isoamyl alcohol treatment followed by RNase treatment. Efficient yields of high-quality amplifiable DNA (200-1200 ng) was produced rapidly with modified CTAB method. Quantity of obtained DNA from this extraction method was controlled in terms of absorbance at wavelength of 260, 230 and 280 nm. The absorbance ratio of A260/A280 indicates presence of dense protein. Spectrophotometric analysis at A260/A280 revealed ratio range of 1.77–1.94. The purified DNA which has excellent spectral quality was efficiently amplified by 48 SSR primers and was suitable for long-fragment PCR amplification.
Published in : HortFlora Research Spectrum, 6 (3): 159-162 (September 2017)

5. Survey and Evaluation of Physico-chemical Characters of Guava (*Psidium guajava* L.) cv. L-49 Growing in Jhalawar District

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ABSTRACT: A survey was undertaken during October-2016 to April -2017 at the guava bearing orchards of fruit growers in Jhalawar district of Rajasthan state with an aim to identify promising type amongst orchards of guava cv. L- 49 growing in the Jhalawar district. 70 samples at uniform maturity in December 2016 were collected from different locations of the Jhalawar district. Among treatment Dag, Gangdhar (T_7) recorded maximum fruit weight (279.98 g) and pulp weight (272.67 g), and treatment Gangdhar, Gangdhar (T_8) recorded maximum fruit length (7.88 cm), fruit diameter (8.80 cm), sensory quality score (8.30), TSS content (10.80°brix), TSS : Acid ratio (38.33), reducing sugars (5.18 %), non-reducing sugars (4.81%) and total sugars content (10.25 %). The treatment Narayan Khera, Pachpahar (T6) [6]estimated minimum seed: pulp ratio (0.016), while treatment (T_{13}) Chand Kheri, Khanpur possessed maximum length of edible portion excluding seed cavity (15.96 mm), The treatment Sareri, Manohar-Thana (T_9) observed highest value of ascorbic acid (263.00mg/ 100g fruit pulp). The treatment Lhas, Aklera (T_1) was found having minimum number of seeds per fruit (161) and minimum weight of seeds in fruits (3.92 g). Based on these findings it can be concluded that treatment Gangdhar, Gangdhar (T_8) was found superior over all other treatments with respect fruit quality parameters and can be utilized for improvement in breeding programmes.
Published in : HortFlora Research Spectrum, 6 (3): 163-167 (September 2017)

6. Genetic Variability, Heritability and Genetic Advance in Tomato (*Lycopersicon esculentum* Mill.)

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ABSTRACT: The present study on genetic variability, heritability and genetic advance in tomato germplasm for horticultural traits under Lucknow conditions was carried out at the Horticulture Research Farm of Department of Applied Plant Science, BBA University, Vidya Vihar, Rae Bareli Road, Lucknow (U.P.), India, during *Rabi* season of 2015-16. On the basis of overall findings, it was concluded that there is wide range of variation in tomato strains for all the characters studied. The strain PT-11 is highly significant for days to marketable picking, number of flowers/cluster, number of fruits/cluster, number of fruit/plant, fruit weight/ cluster and fruit yield, and the biochemical traits viz., TSS and ascorbic acid were found highest in PH-2 strain of tomato except acidity.
Published in : HortFlora Research Spectrum, 6 (3) : 168-172 (September 2017)

7. Delineation of *Psidium spp.* using Morphological Traits

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ABSTRACT: The main aim of study was to characterize 20 genotypes of *Psidium spp.,* consisting of 16 cultivated varieties and 4 wild *spp.* at morphological level. Observations were recorded for different leaf characters *viz.,* length of leaf blade, width of leaf blade, petiole length, number of veins, surface area of leaf, shape of leaf, shape of leaf apex and base, colour of upper and lower leaf surface, colour of leaves during winters, texture of leaf, pubescence and leaf lamina thickness which revealed that significant variations were present with reference to various morphological characteristics among the different genotypes. *Psidium chinensis* was observed to be most diverse morphologically. Considering shape of leaf, shape of leaf apex and base and leaf colour during winters, these leaf morphological characters were quite informative and useful in characterizing these genotypes, as some genotypes could easily be identified using a combination of these characters.
Published in : HortFlora Research Spectrum, 6 (3) : 173-176 (September 2017)

8. Screening of Ber (*Zizyphus mauritiana* Lamk.) Genotypes for Sodium Induced Sodicity

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ABSTRACT: A pot experiment was carried out at Main Experiment Station, Department of Horticulture, NDUA&T, Narendra Nagar Kumarganj, Faizabad during years 2010-12 to evaluate the performance of seven commercially grown ber cultivars across the country *viz.,* Banarasi Karaka, Narendra Ber Sel.-1, Narendra Ber Sel.-2, Narendra Ber Sel.-3, Ponda, Mundia Murahara and Pathan adjacent to different levels of soil sodicity (ESP) viz., normal soil, 15, 30, 45 and 60 for plant establishment, survival, initial vegetative growth (570 days) and salt injury. Establishment and plants survival decreased significantly with increasing soil ESP. The plant growth decreased with increase in level of sodicity. The increasing sodicity caused significant decrease in plant height, stem diameter, plant spread, number of leaves and fresh and dry weight of shoots and roots. Plants showed sodium toxicity symptoms as tip burning and yellowing of leaves at higher sodicity levels.
Published in : HortFlora Research Spectrum, 6 (3) : 177-181 (September 2017)

9. Effect of Different Growth Regulators on Propagation of Sanchezia (*Sanchezia nobilis* Hook.) in Subtropical Zone of W. Bengal

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ABSTRACT: The present investigation was carried out to study the effect of different growth regulators on propagation of Sanchezia (*Sanchezia nobilis* Hook.) in subtropical zone of West Bengal under natural ventilated polyhouse at Mondari farm of BCKV, Mohanpur, Nadia, West Bengal, during 2014-15 and 2015-16. All parameters were significantly varied among the treatments (T_1: IAA @1000ppm, T_2: IAA @ 2000ppm, T_3: IAA @3000ppm, T_4: IBA @1000ppm, T_5: IBA @2000ppm, T_6: IBA @3000ppm, T_7: NAA @1000ppm, T_8: NAA @2000ppm, T_9: NAA @3000ppm, T_{10}: Control) during investigation . After studying of two consecutive years, it has been found that tip cutting of this plant treated with NAA (2000-3000 ppm) in the month of June is found better for propagation towards of its multiplication in subtropical zone of West Bengal and the second best growth regulator IAA at 2000 ppm may be considered in this aspect.
Published in : HortFlora Research Spectrum, 6 (3) : 182-185 (Sep tem ber 2017)

10. Effect of Soil Sodicity on Nutrient Content in Leaves of Different Varieties of African Marigold

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ABSTRACT: In present investigation six different varieties of African marigold (*Tagetes erecta*) viz. Local Selection, Pusa Basanti Gainda, Pusa Narangi Gainda, African Tall Orange, Sunset Giant and Inca Hybrid were grown in artificially prepared sodic soils having 20, 30 and 40 ESP levels apart from control (9.99), to evaluate the effect of sodicity on leaf nutrient status and result obtained was expressed in % dry weight basis. The experiment was laid out in Factorial CRD design with a total of twenty four treatments and three replications for the two consecutive years. It was found that nutrients like nitrogen, phosphorus, potassium, calcium and magnesium showed a gradual decrease with enhanced sodicity level. The decrease was more pronounced at 40 ESP. Only sodium was found to increase with enhanced levels of sodicity.

Published in : HortFlora Research Spectrum, 6 (3) : 186-191 (September 2017)

11. Effect of Stratification Duration and Seed Treatment with GA_3 on Seed Germination, Transplanting Success and Seed ling Mortality in Chinese Guava (*Psidium sp.* L.)

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ABSTRACT: The experiment was con ducted at the Department of Horticulture, Kulbhasker Ashram Post Graduate College, Allahabad, Uttar Pradesh with a view to standardize suitable stratification duration and hormone concentration for guava seed treatment. There were seven treatment combinations including a control. Different duration of seed stratification *i.e.,* 24 hours, 48 hours and 72 hours were tried along with the 100 ppm, 200 ppm and 300 ppm GA_3 seed treatment. Treated seeds were sown in the polythene bags (25 ×15 cm size, 200 gauge thick) containing soil, sand and FYM mix ture (1:1:1). It was interesting to note that the effect of stratification duration and hormone treatment concentration was found to be significant for seed germination, transplanting success, seedling mortality percentage and rate of seed germination. Treatment T_6 (48 hrs stratification + 300 ppm GA_3) resulted in highest percentage (51.0 %) of seed germination while the lowest percentage (23.25) was recorded in T_9 (72 hrs + 300 ppm GA_3) treatment and the transplanting success was also lowest in T_9. The seedling mortality percentage was maximum (62.66%) with T_9 whereas lowest percentage (17.0%) was observed in T_6 treatment. It may be concluded that T_6 treatment can be recommended for the better stand establishment of guava nursery.

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12. Economics of Onion in Vijayapur District of Karnataka State

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AB STRACT: The study was conducted in the year 2016–2017 to study the "economics of onion in Vijayapur district of Karnataka state" with a sample of 120 respondents. It revealed that, the cost of cultivation for small, medium and large of farms groups were Rs. 72,123/ha, Rs. 64,965/ha and Rs. 60,705/ha, respectively. Average cost of cultivation in different size farms group was Rs. 66, 274/ha. The gross returns obtained per hectare by small size farms were high (Rs.1,90,000/ha) as compared to medium and large size farms (Rs.1,80,000/ha and Rs.1,60,000 /ha, respectively). Net returns per hectare were highest in small size farms (Rs.1, 17,877/ha) compare to the medium and large size farms (Rs. 1,15,035/ha and 99,295/ha). Cost A_1 was highest in small size farms (Rs. 50,176/ha) followed by medium size farms (Rs. 48,718/ha) and lowest in large size farms (Rs. 46,558/ha), respectively. Cost A_2 in small, medium and large size of farms groups was Rs. 50,176/ha, Rs. 48,718/ha and Rs. 46,558/ha, respectively. Cost B was highest in small size farms (Rs. 62,073/ha) as compared to medium size farms (Rs. 58,455/ha) and in large size of farms (Rs.58,455/ha) respectively. Cost C was highest in small size farms (Rs. 72,123/ha) and lowest in large size farms (Rs. 60,705/ha). Farm business income in small, medium and large size of farms group was Rs. 1,39,824/ha, Rs. 1,31,282/ha and Rs. 1,13,442/ha, respectively. Farm investment income was highest in small size farms (Rs. 1, 29,774/ha) as compared to medium size farms (Rs. 1, 26,932/ha) and lowest in large size farms (Rs. 1,11,192/ha), respectively. Family labour income was Rs. 1,27,927/ha for small size farms group, Rs. 1,21,545/ha for medium size farms group and Rs. 1,00,309/ ha for large size of farms group.

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13. Effect of Time of Pruning on Growth and Flowering of Jasmine [*Jasminum sambac* (L.) Ait.] under Western U.P. Condition

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ABSTRACT: Flower production of jasmine is generally correlated with pruning of flowering plants. The present research work aimed to explore the ideal date of pruning which produce plants with efficient growth and flower yield of *Jasminum sambac* (L.) Ait. cv. Local. Maximum growth (length, secondary and tertiary branches) was obtained when plants were pruned on last week of January at 45 cm height of pruning. The weight of 20 flower buds (2.50 g) was recorded under D_4 (29th January pruning). Maximum number of flowers/bush (751.45), yield of flower/bush (94.56g) and maximum flower yield/ha (6.302 q) was recorded under D_4 (pruning on 29th January).

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14. Effect of Seed Treatment on Seedling Vigour and Mortality of Chinese Ber (*Zizyphus* sp.)

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ABSTRACT: The experiment was conducted at the Department of Horticulture, Kulbhasker Ashram Post Graduate College, Allahabad, Uttar Pradesh with a view to standardize suitable stratification duration and hormone concentration for ber seed treatment. There were seven treatment combinations including a control. Different duration of seed stratification *i.e.,* 24 hours, 48 hours and 72 hours were tried along with the 100 ppm, 200 ppm and 300 ppm GA_3 seed treatment . Treated seeds were sown in the polythene bags (25x15 cm size, 200 gauge thick) containing soil, sand and FYM mixture (1:1:1). It was interesting to note that the effect of stratification duration and hormone concentration was found to be significant for seed germination, transplanting success, seedling mortality percentage and rate of seed germination. Treatment T_6 (48 hrs + 300 ppm GA_3) yielded highest percentage of seed germination (84.00), while the lowest percentage (37.25) was recorded in T_9 (72 hrs + 300 ppm GA_3) treatment and the transplanting success was also lowest in T_9. The seedling mortality percentage was maximum (79.25) with T_9 whereas the lowest percentage (22.00) was observed in T_6 treatment. It may be concluded that T_6 treatment can be recommended for the better stand establishment of ber nursery.

Published in : HortFlora Research Spectrum, 6 (3) : 203-205 (September 2017)

15. Effect of Different Levels of Sodicity on Chlorophyll Content in Leaves of Various Varieties of Af rican Marigold (*Tagetes erecta*)

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ABSTRACT: Marigold is one of the most popular annual ornamental plants. Six different varieties of African marigold (*T. erecta*) *viz.* Local Selection, Pusa Narangi Gainda, Pusa Basanti Gainda, African Tall Orange, Sunset Giant and Inca-Hybrid were grown in sodic soils having 9.9 (control), 20, 30 and 40 ESP levels to evaluate the effect of sodicity on chlorophyll content (mg/g) in leaves of these varieties. The experiment was laid in Factorial CRD design with a total of twenty four treatments and three replications. Experiment was conducted consecutively for two years *i.e.* during 2010-11 and 2011-12. Sodic soils were artificially prepared using different concentrations of sodium bicarbonate for each ESP levels. It was found that chlorophyll 'a' and chlorophyll 'b' contents along with total chlorophyll decreased with increase in sodicity levels. The decrease in chlorophyll 'a' content was 2%, 16% and 30% while, chlorophyll b showed 13%, 27% and 34% reduction at 20, 30 and 40 ESP levels of sodicity. Similarly, the total chlorophyll decreased progressively at each sodicity levels. The reduction in total chlorophyll was 8%, 23% and 30% at 20, 30 and 40 ESP levels, respectively. Inca-Hybrid maintained its chlorophyll content significantly higher (chl'a' 2.46 and 2.42 mg/g, chl'b' 0.87 and 0.85 mg/g and total chl 3.36, 3.34 mg/g) than other five varieties while Sunset Giant variety (chl 'a' 2.04 and 1.99 mg/g, chl'b' 0.60 and 0.57 mg/g and total chl 2.65 and 2.60 mg/g) showed poorest performance among all the varieties.

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16. Effect of Organic Manures and Bio-fertilizers on Vegetative Growth and Yield Parameters of Okra (*Abelmoschus esculentus* L. Moench.) cv. Arka Anamika

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ABSTRACT: A field experiment was conducted to determine effect of organic manures and bio-fertilizers on growth and yield parameters of okra **(***Abelmoschus esculentus* L. Moench) cv. Arka Anamika. The experimental was laid out in randomized block design (RBD) with three replications. The treatments comprised of three organic manures viz. Pressmud, Vermicompost and Poultry manure in combination with three bio-fertilizers, namely *Azospirillum*, Vesicular Arbuscular Mycorrhiza (VAM) and Phosphate Solubilizing Bacteria (PSB). All variable parameters regarding vegetative growth and yield were significantly influenced by different combinations of organic manures and bio-fertilizers. Results indicated that combined application of organic manure and bio-fertilizers i.e. Vermicompost @ 70q/ha + *Azospirillum* @ 55 kg/ha resulted in the significantly better response in respect to early germination (4.87 days), maximum plant height (54.20 cm), maximum leaves/plant (24.87) and early flowering (45.33 days) in okra. Similarly maximum number of pods/ plant (15.07), weight of pods (15.67 g) and yield (262.13 q/ha) were recorded with the soil application of Vermicompost @ 70q/ha + *Azospirillum* @ 55 kg/ha. However, maximum pod length was recorded under Poultry Manure 32.8 q/ha + *Azospirillum* 55 kg/ha.

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17. Assessment of Genetic Variability, Heritability and Genetic Advance in Chrysanthemum (*Dendranthema grandiflora* Tzvelev.)

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ABSTRACT: Studies on genetic variability, heritability and genetic advance were carried out among twenty genotypes of chrysanthemum for characters to identify genotypes to be used in breeding programme. The results showed high phenotypic and genotypic co-efficient of variation for traits like number of flowers per plant (GCV = 49.33; PCV = 49.34) and flower size (GCV = 37.40; PCV = 37.43). The high heritability values were obtained for all the characters. In high heritability estimate coupled with high genetic advance as per cent of mean was observed for number of flowers per plant (101.61), flower size (76.97) and number of primary branches per plant (55.82). It was observed that heritable variability in the breeding materials characters like number of flowers/plant, flower size and plant height after full bloom could be exploited for improvement through crop breeding programme.

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18. IDM Module for Management of Yellow Vein Mosaic Disease in Okra

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ABSTRACT: Okra (*Abelmoschus esculentus* (L) Moench), is widely grown all over tropical, subtropical and warm temperature regions of the world. But the crop is prone to damage by various diseases caused by various insects, fungi, nematodes and viruses. The most common disease of okra is Yellow Vein Mosaic Virus (YMV), spread by white fly (*Bemisia tabaci*). For the management of yellow vein mosaic disease in okra, Integrated Disease Management module in okra was assessed. IDM module reduced the yellow vein mosaic disease incidence from 56.21 to 62.82% and enhanced the productivity from 26.14 to 19.78%, in 2011-12 & 2012-13, respectively.

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19. Micropropagation of Mulberry-A Review

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ABSTRACT : Mulberry belongs to the genus *Morus* and family Moraceae. Mulberry is distributed in tropical, subtropical and temperate zones. Conventional breeding is limited in mulberry due to high heterozygosity and long generation period. Many

of the newly developed mulberry varieties cannot be propagated through stem cutting. Many desired cultivars do not root easily or have low rooting ability. Such difficult varieties could be multiplied by using tissue culture techniques. Micro propagation is a technique used to produce the plants *in vitro* by providing requirements for their growth, using proper growth hormones, through which plants can multiply and regenerates in *in vitro* conditions and as a result we can multiply plants using suitable explants on nutrient media. Advanced methodologies in micro propagation of mulberry have been made by several researchers using different explants and media. The present review is pertaining to the in vitro studies which have already been carried out in *Morus*.

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